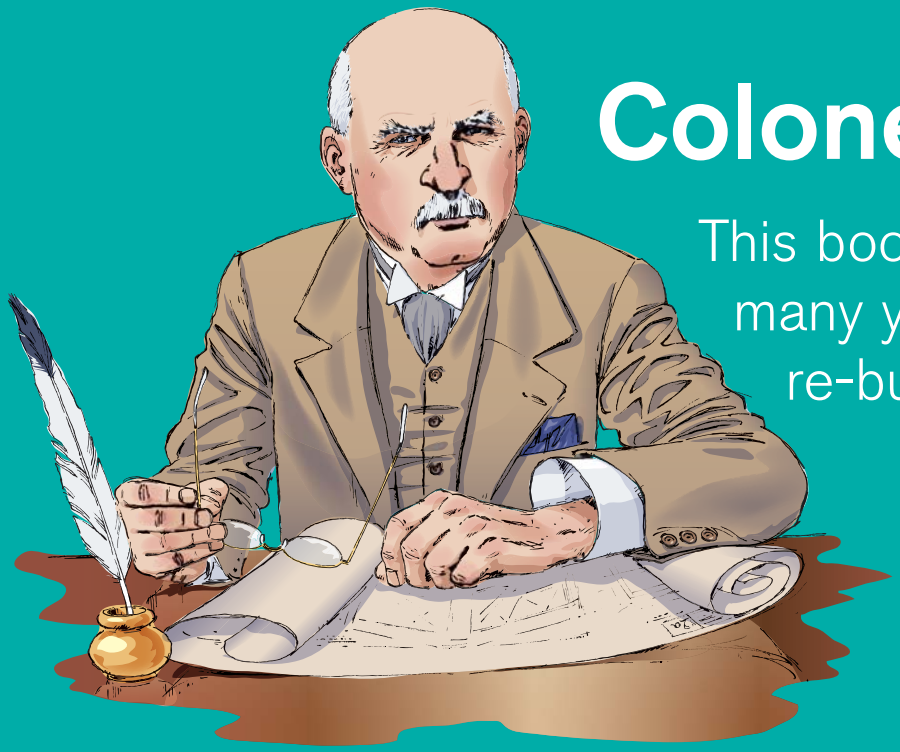


# Colonel Saner's Lift

This book tells the story of Colonel Saner's many years of operating, maintaining and re-building the lift.

ANDERTON BOAT LIFT

# The 1908 Anderton Boat Lift

# Anderton Boat Lift timeline

## JA Saner looked after the lift for almost 50 years

**1721** The River Weaver was made navigable

**1777** The Trent & Mersey Canal opened

**1875** Edwin Clark's hydraulic boat lift opened

**1896** The aqueduct gates were electrified

**1881** Trade was steadily increasing

**1882** A serious accident closed the lift for six months

**1882** Grooves on the hydraulic rams were first noticed

**1886** Tolls were dropped and the lift were made free for boats using the river navigation

**1887** John Arthur Saner became engineer to the Weaver Navigation Trust

**1895** Boats travelling through the lift increased due to the Canal Tolls & Charges Act

**1902** Some manual tasks on the lift were changed to electric operation

**1904** Colonel Saner reported problems and proposed a new design

**1906** Traffic through the hydraulic boat lift reached a peak

**1908** Saner's electric lift was opened

**1922** Extensive repairs were made to the lift due to corrosion of metalwork

**1929** A downward trend in traffic began as cargoes moved to roads

**1934** Colonel Saner retired from the Weaver Navigation Trust

**1939** The Home Guard kept watch on the lift as a potential German target

**1941** The hydraulic rams were removed to provide ironwork for the war effort

**1944** The first of a series of incidents caused damage to the lift

**1946** High water levels on the River Weaver caused flooding

**1949** The waterways were nationalised under the British Transport Commission

**1962** The lift was now transferred to the new British Waterways Board

**1964** Working practices changed; the River Weaver staff now worked on canals too

**1976** The Anderton Boat Lift was listed as a Scheduled Monument

**1983** The lift was no longer safe to operate and it was closed

**1983** Four options for restoration were considered

**1992** Full restoration to the 1908 design was investigated

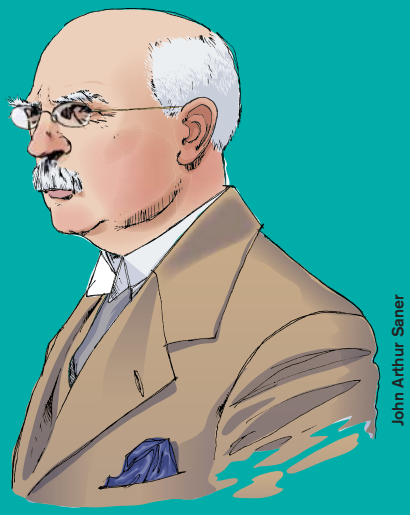
**1998** The restored lift would be hydraulic but many of the 1908 features would be refurbished and kept in place

**1999** The Heritage Lottery Fund committed £3.3million to the restoration

**2002** The lift was restored and opened to visitors

# A long career

When John Arthur Saner became engineer to the Weaver Navigation Trust in 1887 he began a long career overseeing the running of the Anderton Boat Lift.



John Arthur Saner

## Swift promotion

**In 1886 the young Saner was assistant to the Weaver Navigation engineer, Lionel B Wells. Saner gained experience, both in his role as assistant engineer and as Lieutenant in command of C Company in the 3rd Volunteer Battalion of the Cheshire Regiment.**

Members of the volunteer regiments were made up of foremen and local business people who enjoyed the opportunity to get away from the town. They spent time under canvas at places like Tatton Park in Knutsford. Volunteers from the Weaver Navigation workforce would have seen Saner promoted to Captain of D Company, based in Northwich, the following year.

In 1887 the Trust's engineer, Wells took up a new post as engineer to the Aire & Calder Canal. Saner was promoted but the Trustees retained Wells to act as advisor and assist the young engineer for one year.

Courtesy of Cheshire County Council Archives

The Weaver Navigation in Northwich

## The talented engineer

**The engineer to the Trust was expected to produce designs for new structures as well as managing the maintenance and repair of existing structures.**

Saner knew that he would be responsible for the operation of any structure that he built. He designed a swing bridge in 1893 and his paper, published in the Institute of Civil Engineers Minutes described his innovative design solution. He placed the empty shell of an old boiler under the centre of gravity of Town Bridge which allowed a man to turn the bridge by hand through 90° in just 30 seconds.

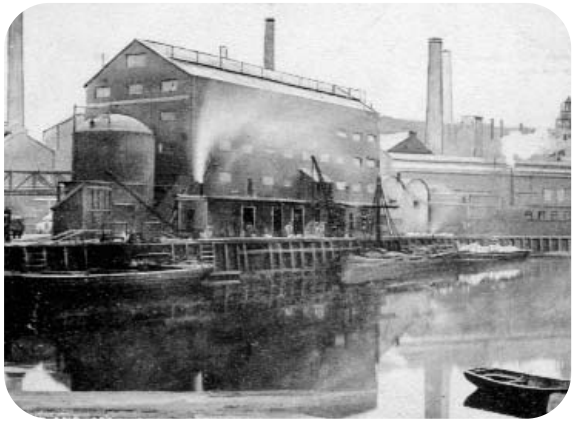
The Trustees expected regular reports from their engineer, not only concerning the condition of their assets, but showing the speed of any repairs carried out and the effect of any works on traffic. Problems with any of the structures, including the lift, could cause a significant drop in profit.

# Problems with the lift

During the 1890s the lift became more unreliable and any closure meant a loss of income for the Trust.

Courtesy of the Salt Museum, Northwich

The mixture of salt and chemicals in the water were an ideal combination for the corrosion of metals.



Courtesy of Cheshire County Council Archives

The Brunner Mond chemical works on the opposite side of the River Weaver.

## Polluted water

**A combination of natural salt deposits, spillages during transhipment and increasing pollution as a result of the growing industrialisation of the area resulted in a mix of chemicals in the water of the river and canal. This mix created the ideal conditions for the corrosion of metals.**

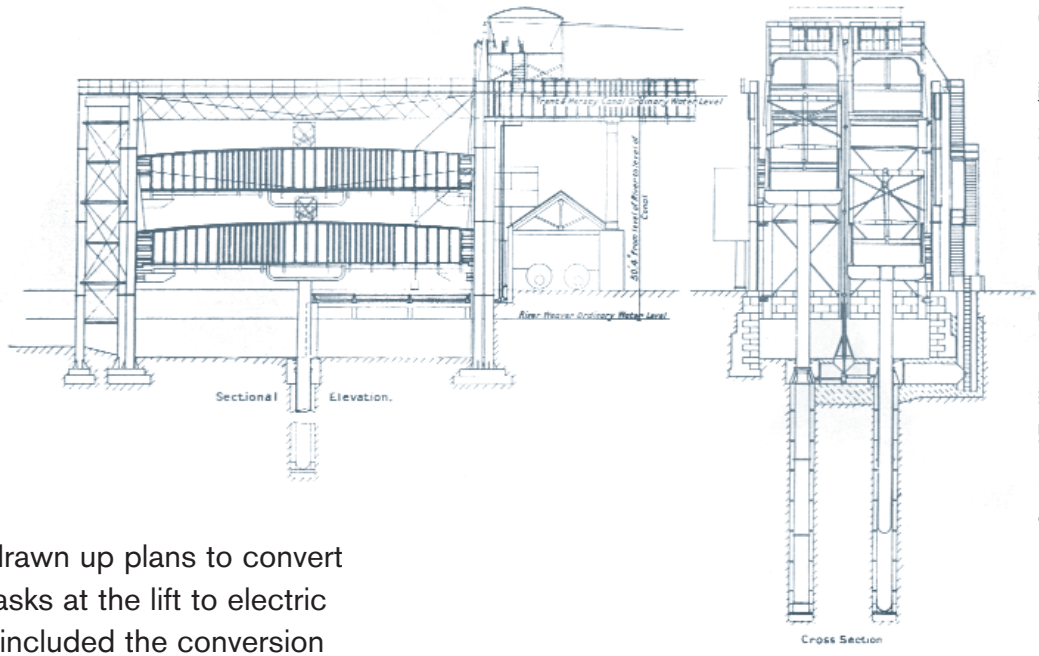
Grooves had worn in the rams, and in order to keep the hydraulic system sealed, the grooves had been packed with copper strips. Saner set up a series of experiments and proved that the cast iron of the rams was being worn away as a result of the copper and cast iron reacting against each other.

In his special report of 1895, he explained 'There is no doubt that in most cases where good water is used, the life of a ram may be greatly prolonged in this way, but should the water be impure and acidulated with chemicals of different kinds, the contact of the copper with the cast iron sets up an electrolyte action, by which iron suffers decomposition more rapidly…'

The Trustees decided to purify the water used in the rams, but as it would be expensive they delayed the works. Saner continued to warn them of the likely breakdown of the lift and the purifying works began in 1897.

Courtesy of British Waterways

The lift was modified to electrical operation of the gates in 1902




Courtesy of The Waterways Trust/The Waterways Archive (Ellesmere Port)

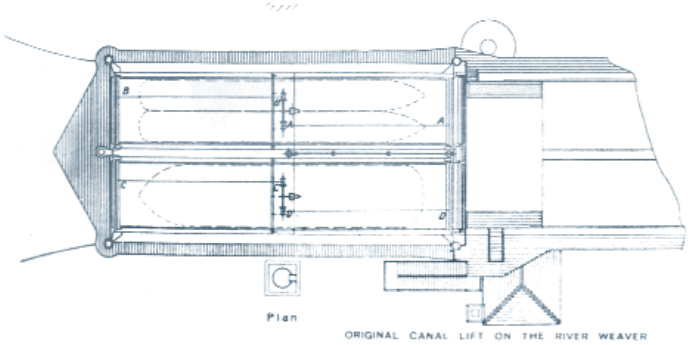
## Modifications to the lift

**The lift continued to suffer regular closures as a result of corrosion. Saner's team were frequently employed in making repairs and he continued to remind the Trustees that a breakdown would eventually lead to a severe loss of revenue if the lift was unable to be repaired.**

During 1899 and 1901, further closures for maintenance and repair were necessary and to minimise disruption to traffic, it is likely that teams of men worked round the clock.

By 1902 Saner had drawn up plans to convert some of the manual tasks at the lift to electric operation. The works included the conversion of the vertical lift gates on the aqueduct and the lift structures and a new electric valve house at the top of the lift. Replacement of the steam engines for the accumulator to electric pumps helped to reduce running costs.

Saner came to the conclusion that although the rams had been preserved with the use of special water, they would eventually need replacing. By 1904, the structure was making around 140 lifts a week. This made a yearly total of 15,000 boats and about 190,000 tons of cargo. Trade was increasing all the time and a radical solution was needed.

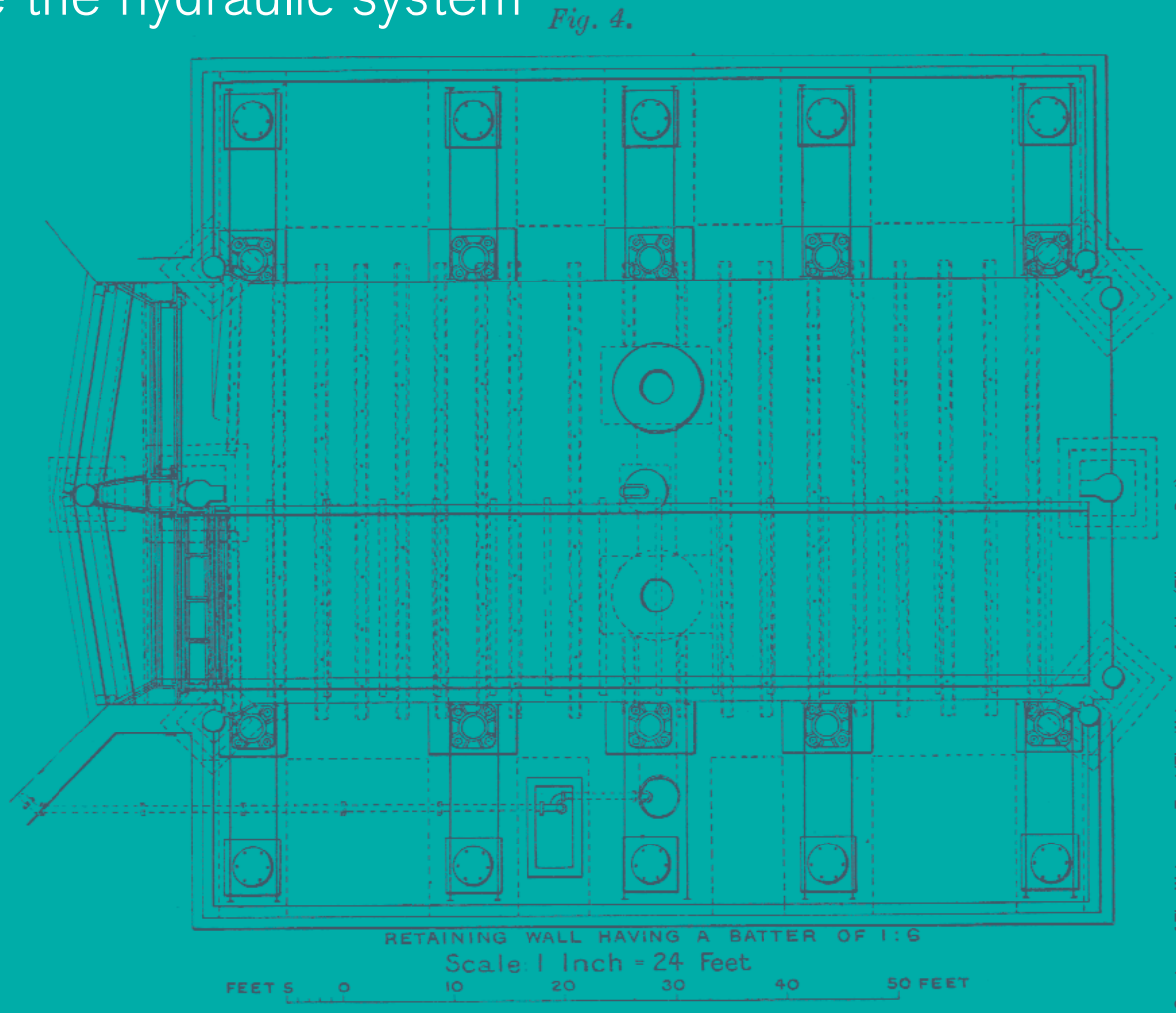


## Saner's practical solution

By 1904 Saner convinced the Trust that the only solution was to modify the lift and replace the hydraulic system with electric power.

Saner put forward two proposals for replacing the lift with minimum disruption of trade.

One option was to build a second lift downstream of the original one. A second option was to 'adopt some other form of mechanism which would enable the lift to be rejuvenated'.

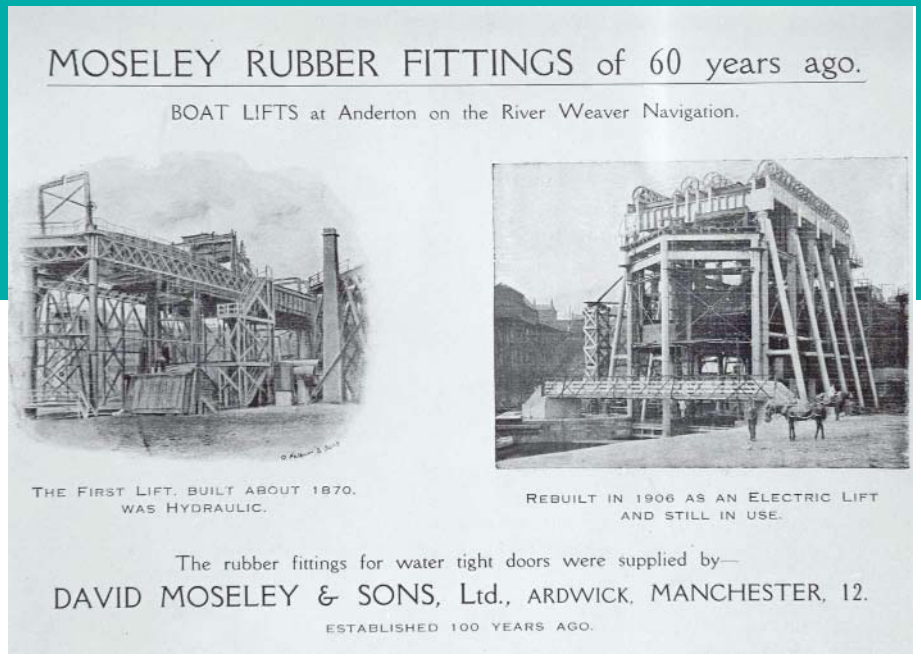



Courtesy of The Waterways Trust/The Waterways Archive (Ellesmere Port)

Courtesy of British Waterways

The machine deck supported substantial gearing.

Courtesy of British Waterways


MOSELEY RUBBER FITTINGS of 60 years ago.
BOAT LIFTS at Anderton on the River Weaver Navigation.
THE FIRST LIFT, BUILT ABOUT 1870, WAS HYDRAULIC.
REBUILT IN 1906 AS AN ELECTRIC LIFT AND STILL IN USE.
The rubber fittings for water tight doors were supplied by—
DAVID MOSELEY & SONS, Ltd., ARDWICK, MANCHESTER, 12.
ESTABLISHED 100 YEARS AGO.

Moseley Rubber supplied fittings to make the gates watertight, probably for both lifts.

## A radical new design

**In his special report of August 1904, Saner outlined proposals for a solution which completely removed the hydraulic system.**

He had patented a design for an electric lift and had a model made at his own expense. The Anderton Lift Committee agreed to pay him £1,050 over 3 years for the use of the design even though he had been continuously employed by the Trust!

In Saner's new design the caissons were now supported by cables hung from a machine deck which he added at the top of the lift. This also supported the balancing weights, gearing and two modern electric motors.

In 1906 the Trustees gave the go ahead for the conversion of the lift to electrical operation and work began straight away.

## Very few working parts!

Saner was delighted with his new design and sold its merits enthusiastically to the Trustees claiming that the new lift had ‘very few working parts’.

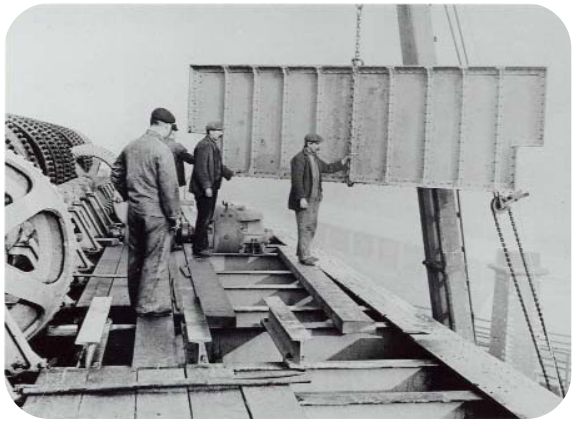
In fact, the design was a far more complicated structure than the hydraulic system. It had gearing, drive shafts, motors, pulleys, wires and massive counter weights, all requiring constant maintenance to keep them running smoothly.

Courtesy of The Waterways Trust/The Waterways Archive (Ellesmere Port)

Saner’s men worked on the conversion of the lift under his supervision.

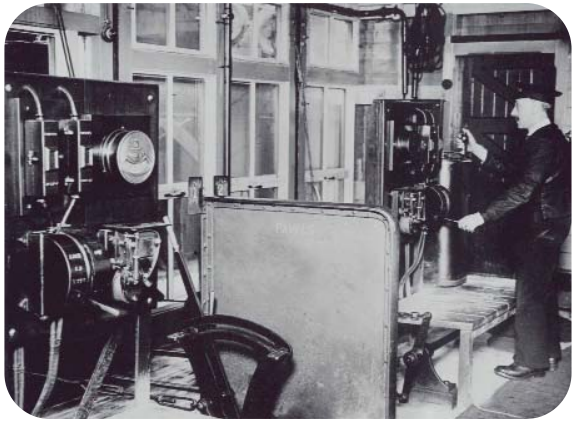
Courtesy of British Waterways

Foundation work was carried out by Saner's team.



Courtesy of British Waterways

A section of the machine deck is manouvred into place.



Courtesy of British Waterways

The new operating hut in the 1908 lift.

## An efficient transformation

**Saner's greatest triumph was the efficient manner that the conversion was carried out. The Trustees were advised that the work could be completed with only three relatively short closures to traffic.**

The Weaver Navigation workforce, under the supervision of Saner carried out the conversion. The foundation work meant that the lift was closed to traffic for 19 days in which men worked in relays round the clock!

A second closure of 10 days allowed completion of any work that was affected by water including installing new frames for the river gates.

All the parts for the new lift were brought in from various companies and prepared at the Weaver Navigation yard at Northwich. When they were ready for assembly, they were transported the relatively short distance to Anderton and the 'A' frames were put up whilst the lift was still open to traffic!

The lift was finally closed to traffic for 20 days in April and May 1908 so that the hydraulic ram head could be removed, modifications made to the caissons and wire ropes and counterweights could be installed. The aqueduct was refilled and the converted caisson was made ready for testing.

## A great success

**The Anderton Boat Lift 1908 Report claims 'so well had the things been arranged that the caisson moved without the slightest hitch when the power was switched on'.**

All traffic was taken through one caisson whilst the other caisson was converted and the lift was formally opened in July 1908.

For the next 26 years until his retirement in 1934, Colonel Saner ensured that his men were constantly employed, greasing, checking, painting and repairing all the moving parts to his radical new electric lift.

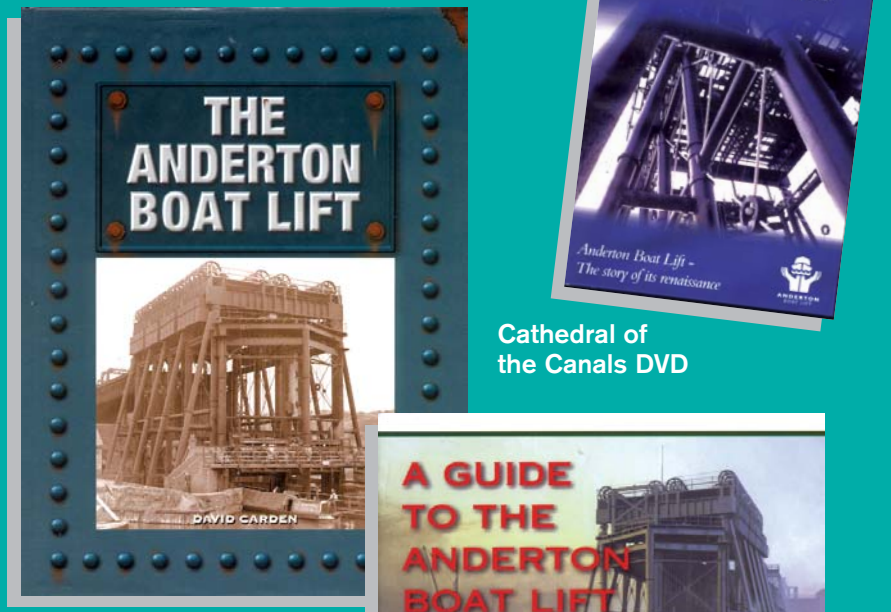
# Find out more!

## Visit the Anderton Boat Lift Shop on the upper floor for souvenirs and gifts.

You can pick up a copy of the well illustrated souvenir guide book.

If you want to find out more about the restoration in 2002, the film, Cathedral of the Canals is great to watch.

David Carden's book The Anderton Boat Lift is a great buy for anyone who really wants to find out all the details! Superbly illustrated with historic photographs, drawings and maps, the book is a fascinating read.


CATHEDRAL OF THE CANALS
Anderton Boat Lift - The story of its renaissance
THE ANDERTON BOAT LIFT
DAVID CARDEN
A GUIDE TO THE ANDERTON BOAT LIFT
DAVID CARDEN & NEIL PARKHOUSE

**Cathedral of the Canals DVD**

**The Anderton Boat Lift book by David Carden**

**Souvenir guide book**